

Tree Plantation App (Android)

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Overview

Project Overview

Introduction

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- Our app

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Project Overview

- A system to monitor the growth of plants/trees
- Key approaches - images, weather, soil conditions
- Features to adopt trees, contribute to other person's album
- GPS and barcode/QR code to facilitate the tracking

Introduction- Existing apps/websites

Sankalptaru

- Make payment online and the organisation will plant for you (typically Rs. 150-200)
- It includes local people to plant and look after the trees
- Updates about the plant sent in the form of pictures

Plant a tree India

- Similar to Sankalptaru
- Green patrolling - for regular health check up of the plants
- Nature walk and photo walk sessions
- Contribute - can donate seeds, saplings, equipments, lands apart from financial aids

Introduction- Existing apps/websites

PlantNet

- A social media of plants
- Can upload photos of your own trees (of flowers, leaves, branches etc.) , tag them properly and anyone can see
- Currently four projects- W. Europe , Indian ocean, S. America, N. Africa

Other worldwide organisations

- World land trust
- Tree Nation
- Grow-trees
- Plant a billion trees

Introduction- Our app

Plant yourself

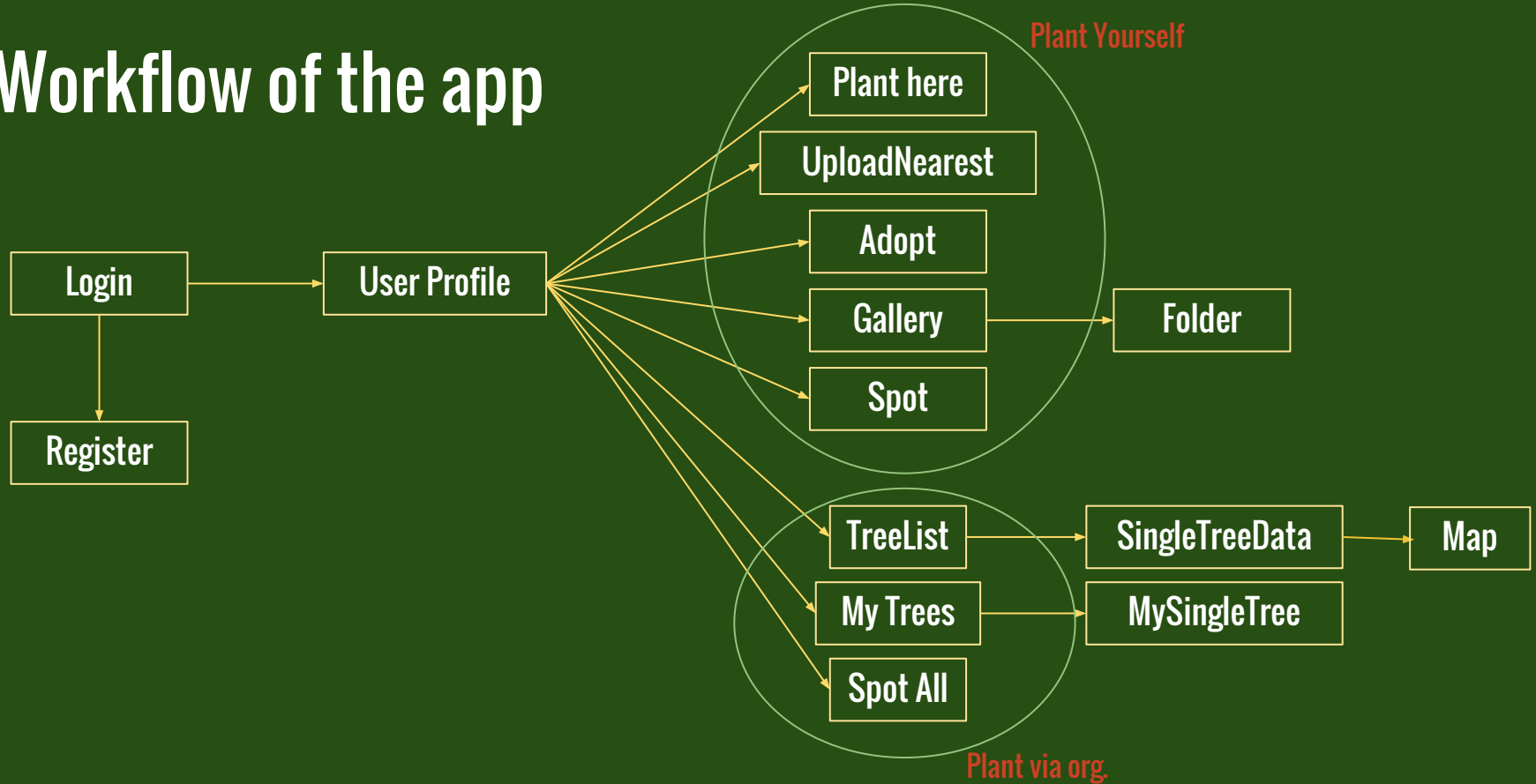
- Help people monitor their saplings/plants via pictures at different points of time
- Plant the seed/sapling -> open the app -> click pictures -> click upload
- A new directory created for every new plant with location coordinates in the database
- Upload pictures for other's trees as well
- A new subdirectory is created for each time someone clicks photograph of some plant with timestamp entry in the database

Introduction- Our app

Plant via organisation

- Created before the previous part, although is not required. Still in the project.
- A list of seeds/saplings available with the organisation is produced
- Select an plant/seed of your choice and then a maps activity is opened
- You can mark the position where you want to plant
- Location coordinates are saved along with the details of the plant
- The organisation is supposed to plant it now at the given location

Workflow of the app

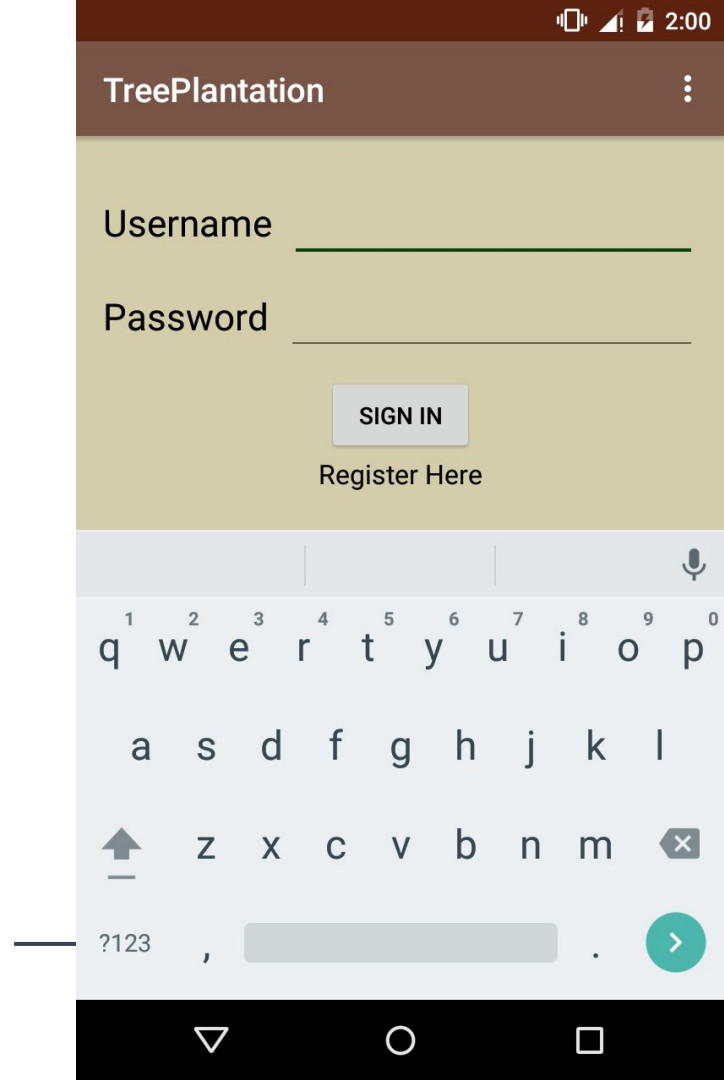


Current status

Plant yourself

LoginActivity

- The first screen a user encounters
- If already logged in, UserProfile is displayed
- For now, only strings are matched for both username and password

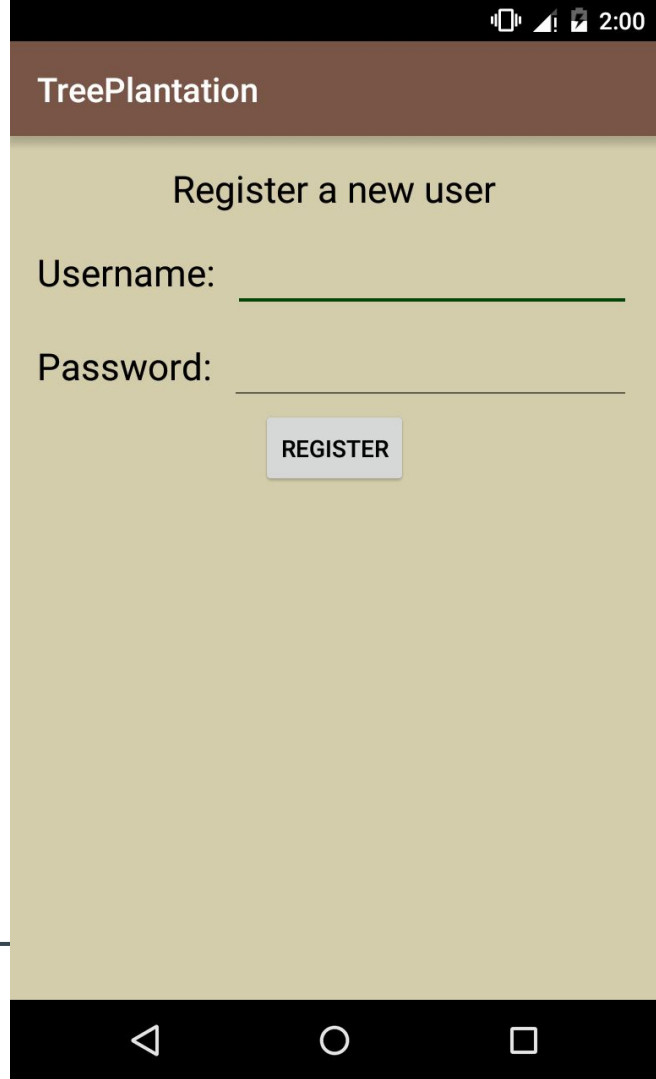


Current status

Plant yourself

RegisterUser

- Activity where user can register himself
- For now, exact strings are saved for both username and password in the database



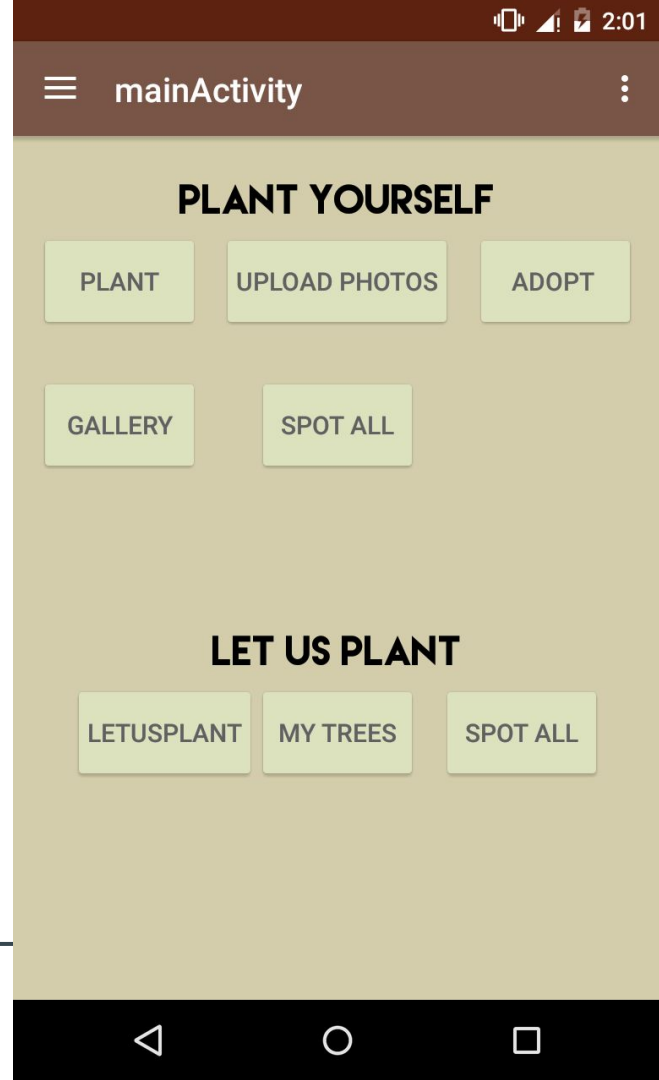
The screenshot shows a mobile application interface for 'TreePlantation'. At the top, there is a dark brown header bar with the text 'TreePlantation' in white. Below the header, the main content area has a light beige background. It features the text 'Register a new user' in a dark font. Underneath, there are two input fields: 'Username:' followed by a horizontal line, and 'Password:' followed by a horizontal line. Below these fields is a light gray button with the text 'REGISTER' in dark capital letters. At the very top of the screen, above the header, there is a status bar showing icons for signal strength, battery, and the time '2:00'. At the bottom of the screen, there is a dark navigation bar with three white icons: a triangle, a circle, and a square.

Current status

Plant yourself

UserProfile

- The “main” screen
- User can navigate anywhere from here
- Details about the user in the navigation drawer at the left

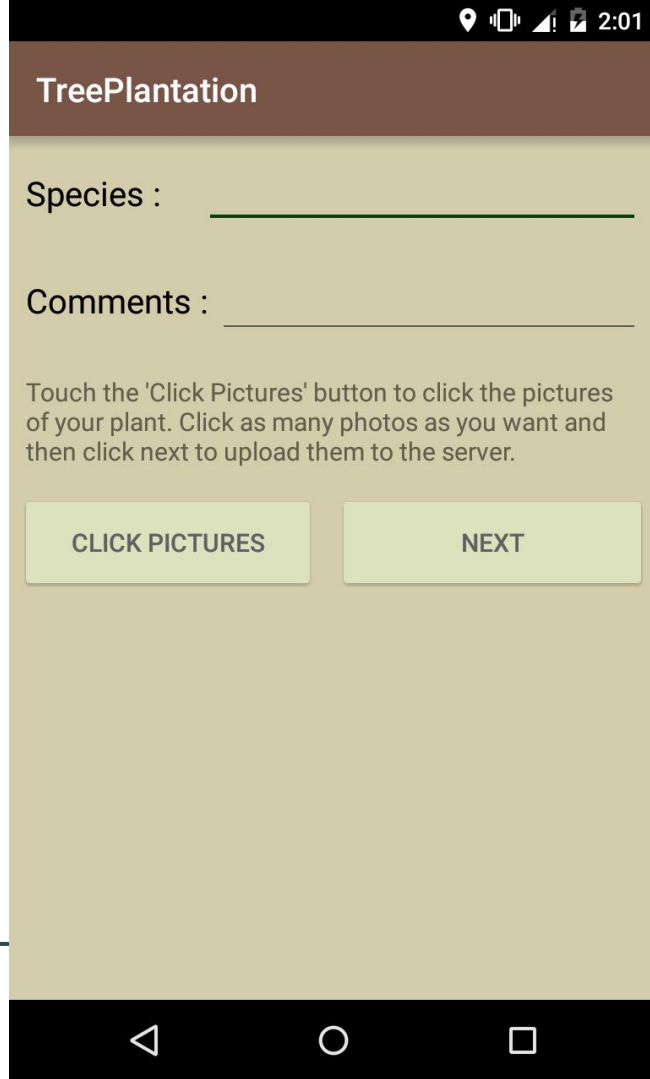


Current status

Plant yourself

PlantHereActivity

- On clicking “plant” button in UserProfile activity
- Next button to upload the images
- Uses LocationManager class to get the lastKnownLocation of the phone



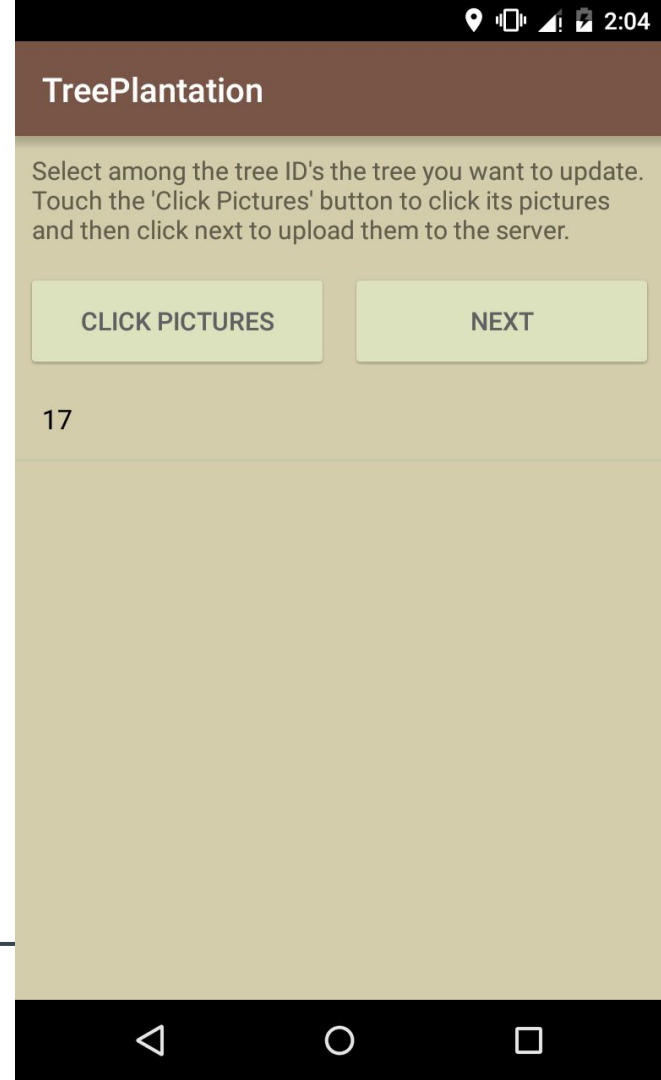
The screenshot shows a mobile application interface for 'TreePlantation'. At the top, there is a status bar with icons for location, signal, and battery, and the time 2:01. Below the status bar is a dark red header with the text 'TreePlantation'. The main content area has a light beige background. It contains two input fields: 'Species :' followed by a horizontal line, and 'Comments :' followed by a horizontal line. Below these fields is a paragraph of text: 'Touch the 'Click Pictures' button to click the pictures of your plant. Click as many photos as you want and then click next to upload them to the server.' At the bottom of the form are two light green buttons with rounded corners: 'CLICK PICTURES' on the left and 'NEXT' on the right. The bottom of the screen shows a black navigation bar with three white icons: a back arrow, a circle, and a square.

Current status

Plant yourself

UploadNearestTree

- On clicking “upload” button in UserProfile activity
- List of trees in the vicinity displayed
- Click “click pictures” button to click photos and “next” button to upload

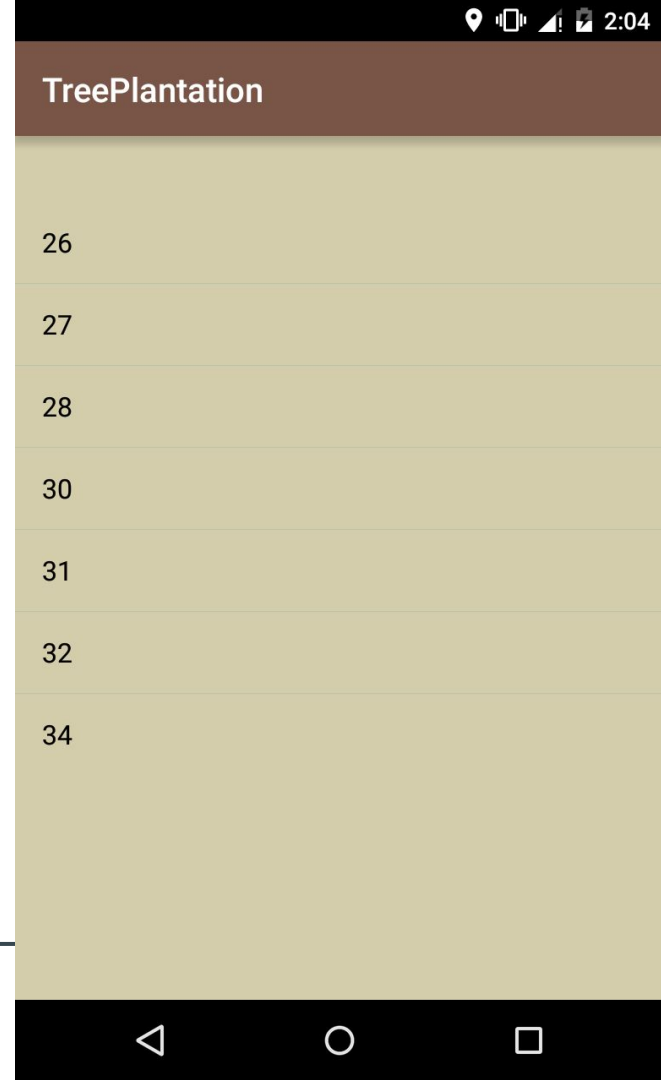


Current status

Plant yourself

MyGallery

- On clicking “gallery” button in UserProfile activity
- Displays all albums that you have clicked with this account
- It need not be your own tree

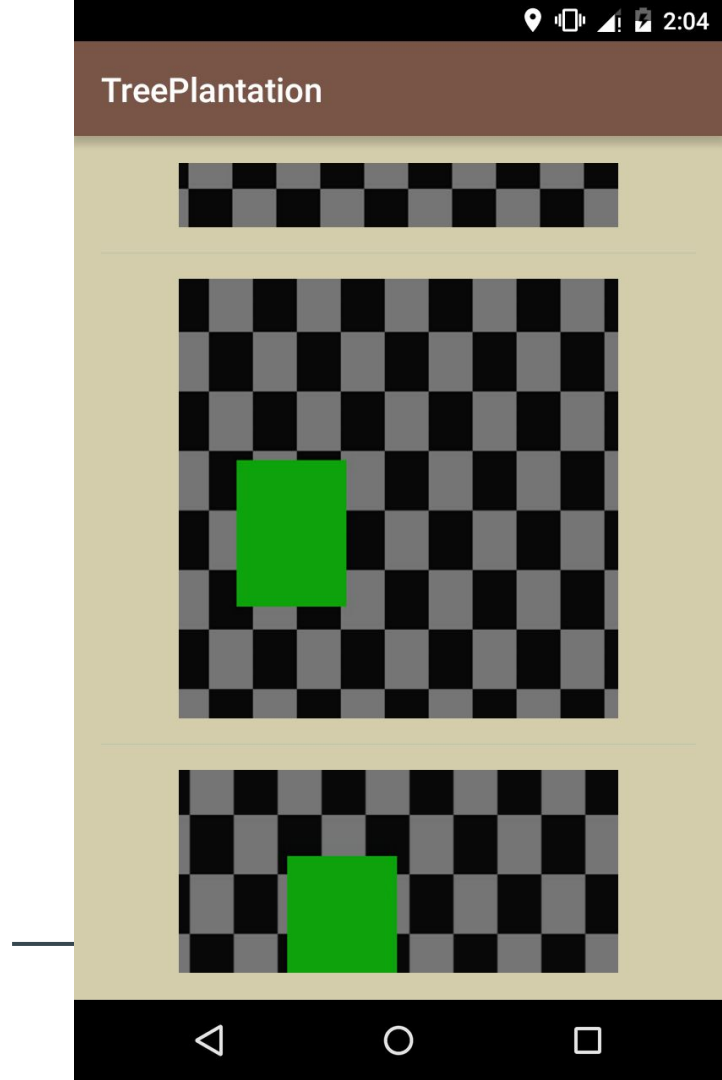


Current status

Plant yourself

MyFolder

- On clicking any album from the list of albums in MyGallery activity
- All the images of the album displayed



Current status- Plant yourself

Adopt*

- On clicking “adopt” button in UserProfile activity
- Touch on Adopt button while you are standing nearby a tree
- The app will produce a list of trees nearby you
- Upload images, get updates about the tree after you adopt it

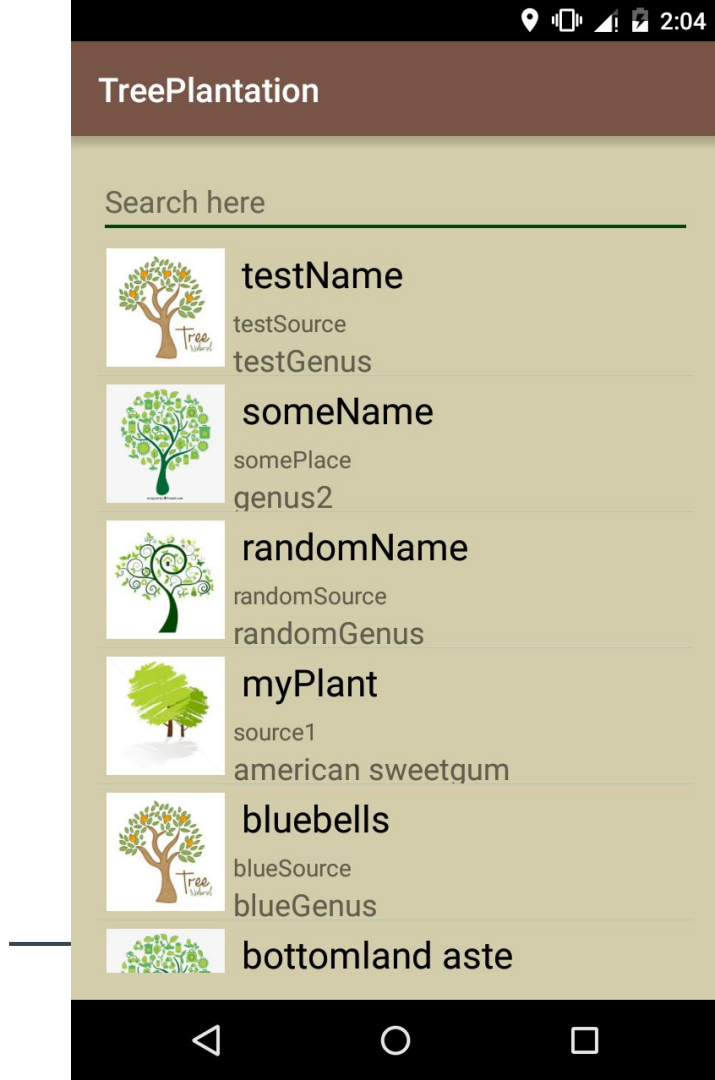
Spot*

- On clicking “spot” button in UserProfile activity
- Spot all your trees on the map

Current status Plant via org.

PlantList

- On clicking “Let us plant” button in UserProfile activity
- List that includes available seeds/saplings
- Search bar



Current status Plant via org.

SingleTreeData

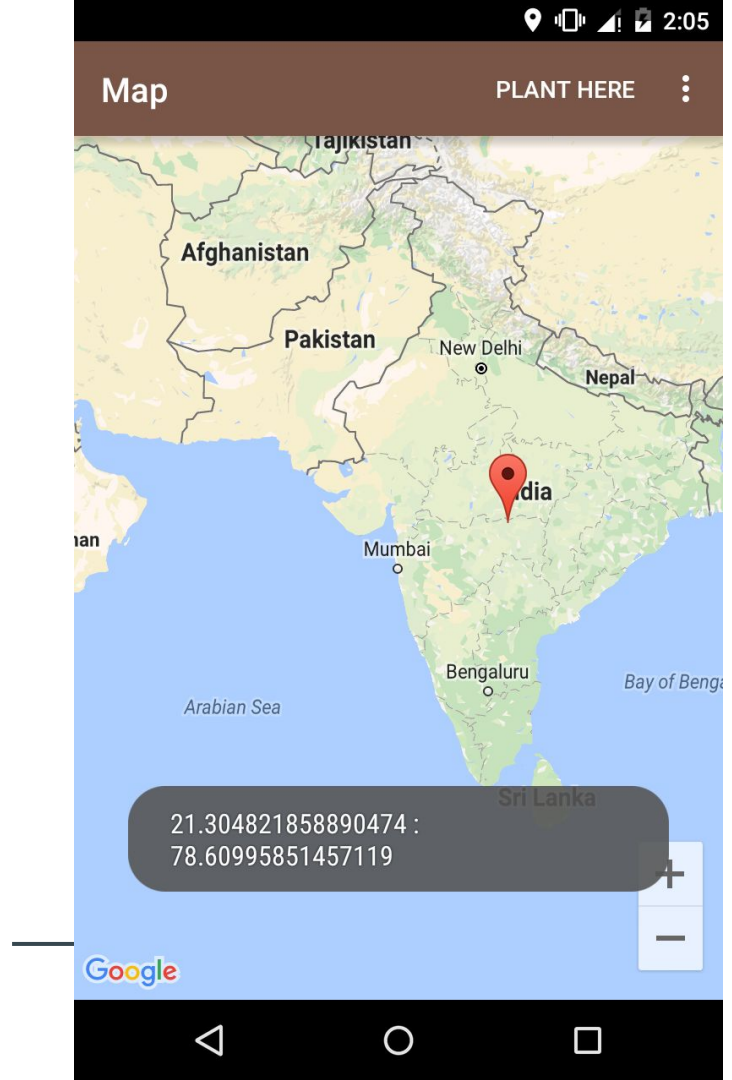
- On clicking any seed/species from the list in PlantList activity
- Description of the species including the image



Current status Plant via org.

PlantHereMap

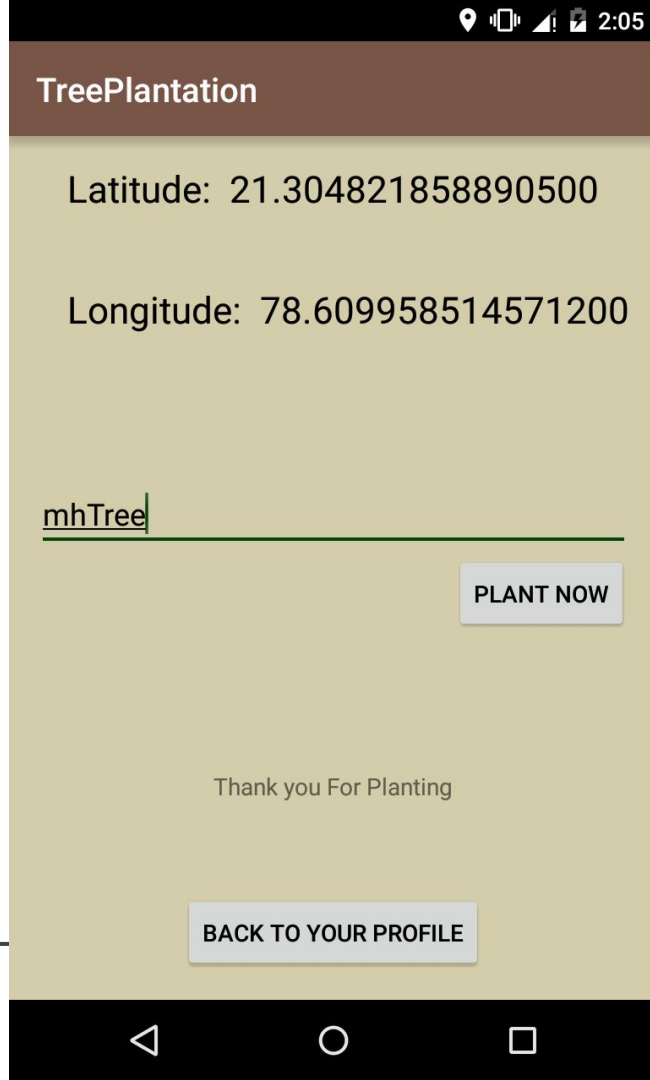
- On clicking “plant this tree” button in SingleTreeData activity
- Long press on a location to mark it



Current status Plant via org.

TreePlantedMessage

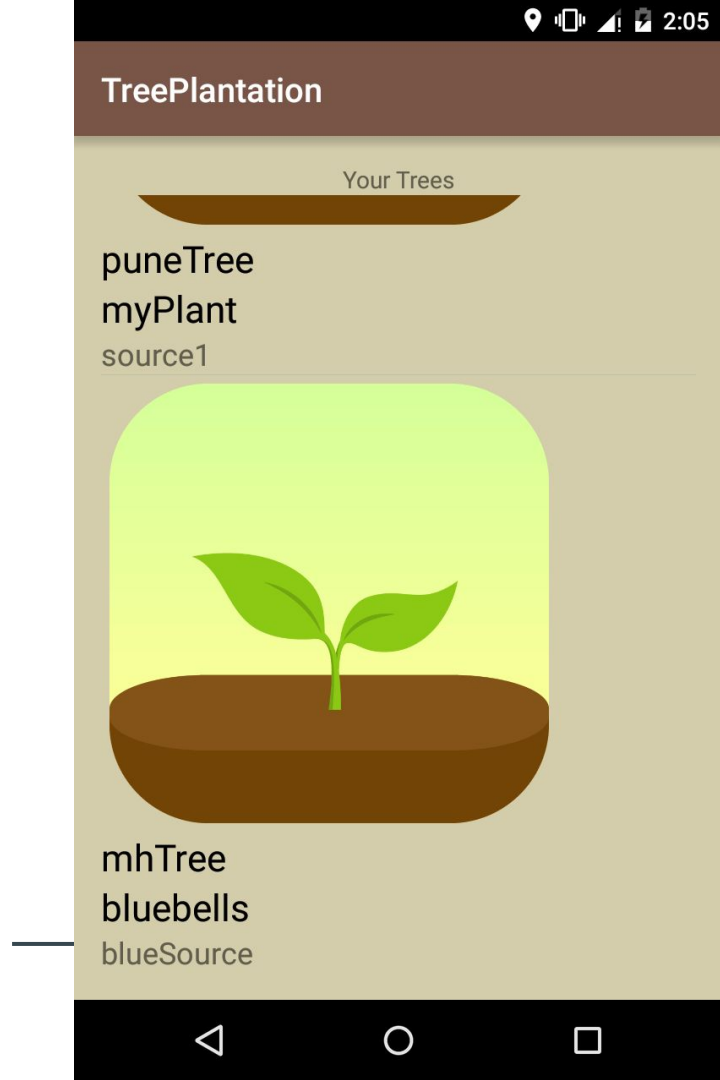
- On clicking “plant here” button in toolbar in PlantHereMap activity
- Displays coordinates
- You can name the tree from here



Current status Plant via org.

MyTreeList

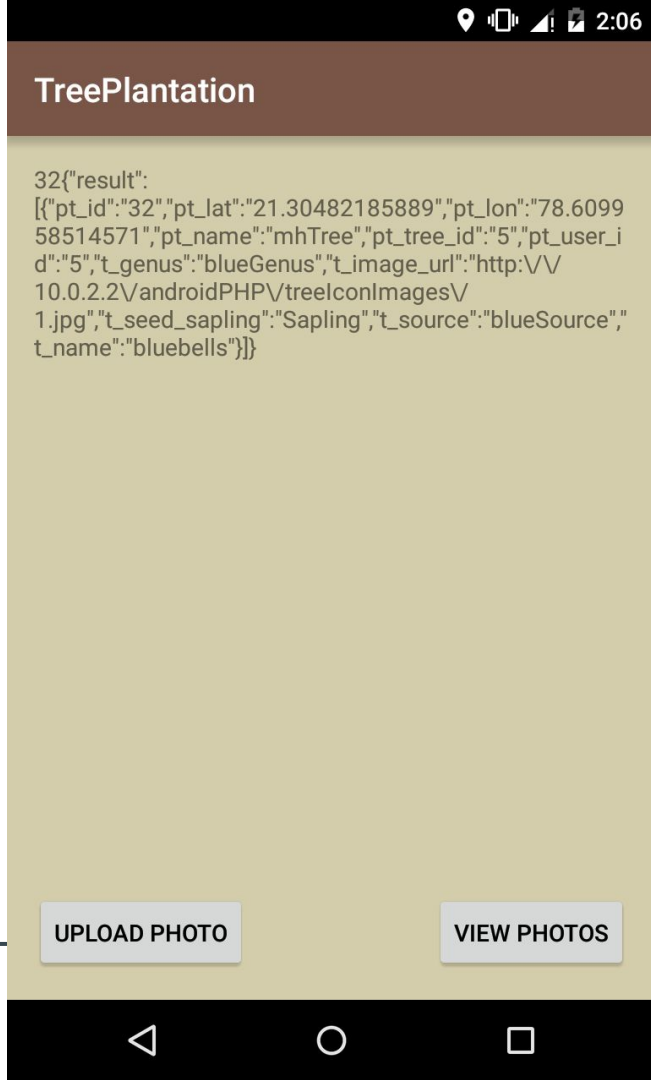
- On clicking “my trees” button in UserProfile activity
- Displays all the trees planted by you using the app



Current status Plant via org.

MySingleTree

- On clicking on a particular tree in MyTreeList activity
- Details about the plant*



Current status Plant via org.

SpotAllYourTrees

- On clicking “Spot all” in UserProfile activity
- Can view all the plants planted using our app



Permissions and key libraries

Libraries

- Volley - Used instead of AsyncTask handlers to facilitate the networking part
- Picasso - Used for displaying images
- Google play services - For Google Maps

Permissions and key libraries

Permissions

- `INTERNET`
- `WRITE_EXTERNAL_STORAGE + READ_EXTERNAL_STORAGE`
- `ACCESS_FINE_LOCATION (ACCESS_COARSE_LOCATION)`
- `HARDWARE.CAMERA`

Server side scripting and database

- Server side scripting is done in PHP5
- Database - SQL
- 6 tables -
 - Users
 - PlantYourself - MyPlantedTrees and MyPlantedTreeImages
 - Plant by org. - Trees, plantedTrees, PlantedImages
- 15+ php scripts - basic SELECT, INSERT mysqli queries in most
- `base64_decode($string)` and `file_put_contents($file)` used to upload images in the directory

Future enhancements possible/required

- Better GUI, additional information of plants
- Password hashing, Google and Facebook logins
- Offline clicking and uploading later
- MyGallery's and Myfolder's displays
- QR/barcode using the ZXing library in android
- Tracking a friend's activity (sort of a social media!)
- Reminders based on periodicity set by us or if pinged by some person

References

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Thank You!